

WHAT IS CLAIMED IS:

1. A polycrystalline structure film comprising:
metallic nucleation sites sparsely existing over a surface of a substrate, said metallic nucleation sites including a compound; and
a metallic crystal layer covering over the surface of the substrate and containing crystal grains having grown from the metallic nucleation sites.

2. The polycrystalline structure film according to claim 1, wherein said compound is a metallic compound.

3. The polycrystalline structure film according to claim 2, wherein said metallic compound includes at least one of a metallic nitride and a metallic oxide.

4. The polycrystalline structure film according to claim 3, wherein said metallic compound is any of Si_3N_4 , SiO_2 and Al_2O_3 .

5. The polycrystalline structure film according to claim 1, wherein said metallic nucleation sites include platinum atoms.

6. The polycrystalline structure film according to claim 1, wherein said metallic nucleation sites contain said compound in a range between 5at% and 20at%.

7. A method of making a polycrystalline structure film, comprising: causing metallic atoms and compounds to deposit over a surface of a substrate.

8. The method according to claim 7, wherein radio frequency sputtering is employed to cause the metallic atoms and the compounds to fall over the substrate.

9. The method according to claim 8, wherein a target of the radio frequency sputtering comprises a composition of a powder compact of the metallic atoms and a powder compact of the compounds.

10. The method according to claim 8, wherein a target of the radio frequency sputtering comprises a block consisting of metallic atoms and chips of the compounds located on a surface of the block.

11. The method according to claim 7, wherein DC sputtering is employed to cause the metallic atoms to fall while radio frequency sputtering is employed to simultaneously cause the compounds to fall.

12. The method according to claim 7, wherein said substrate is maintained at a normal temperature when the metallic atoms and the compounds are caused to fall.

13. The method according to claim 12, wherein said substrate is maintained at a normal temperature when crystal grains is caused to grow on the substrate after deposition of the metallic atoms and the compounds.

14. The method according to claim 7, wherein said compounds are metallic compounds.

15. The method according to claim 14, wherein said metallic compounds include at least one of a metallic nitride and a metallic oxide.

16. The method according to claim 15, wherein said metallic compounds are any of Si_3N_4 , SiO_2 and Al_2O_3 .

17. The method according to claim 7, wherein said metallic atoms include platinum atoms.